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| 10/511,807 | 10/19/2004 | Dirk Jeroen Brocbaart | NL 021156 | 6530 |

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| EXAMINER |
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FAULK, DEVONA E

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| ARTUNIT | PAPER NUMBER |
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2615

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02/22/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/511,807

Applicant(s)

BREEBAART ET AL.

Examiner

Devona E. Faulk

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-15 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The preliminary amendment filed on 10/19/2004 was entered.

Claim Objections

1. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 11 and 12 rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 11 is non-statutory because it claims a "an encoded audio signal". Claim 12 is non-statutory because it claims " a storage medium have stored thereon an encoded signal". The office considers this non-statutory subject mater because they do not fit within the recognized categories of statutory subject matter (See MPEP §2106- §2106.02).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 11 recites the limitation "of the at least two input audio channels" in line 5. The first limitation, in lines 2 and 3, recite "at least two audio channels". There is insufficient antecedent basis for this limitation, "at least two input audio channels", in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-7,9-11,13-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Baumgarte et al. (US 2003/0035553).

Regarding claim 1, Baumgarte discloses a method of coding an audio signal, the method comprising:

generating a monaural signal comprising a combination of at least two input audio channels (mono audio signal generated by PCSC encoder 1201, Figure 12; page 7, ¶ 0081),

determining a set of spatial parameters indicative of spatial properties of the at least two input audio channels (PCSC encoder generates spatial cues based on audio signals input to PCSC encoder and is implemented based on transmitter 1000 of Figure 10, Figure 12, ¶ 0081-0082 and ¶ 0074), the set of spatial parameters including a

parameter representing a measure of similarity of waveforms of the at least two input audio channels (in transmitter 1000 each pair of frequency bands for left and right audio signals are compared to generate one more spatial cues (e.g. an ILD value, an ITD value and/or an HRTF (§ 074); for each frequency band, a cross-correlation between the converted left and right audio signals is estimated)

and generating an encoded signal comprising the monaural signal and the set of spatial parameters (modulation module 1204 embeds the sets of auditory scene parameters generated by the PCSC encoder into the mono signal to generate a PCSC 0073signal that is transmitted to the PCSC receiver, Figure 12; page 7, § 0082).

Claim 2 is dependent upon claim 1. Regarding claim 2, Baumgarte discloses wherein the step of determining a set of spatial parameters indicative of spatial properties comprises determining a set of spatial properties as a function of time and frequency (Baumgarte , page 6, § 0074 teaches that the location in time of the maximum of the cross-correlation corresponds to the ITD and the ILD is obtained by computing the level difference of the power spectral values of the left and right signals).

Claim 3 is dependent upon claim 2. Regarding claim 3, Baumgarte discloses dividing each of the at least two input audio channels into corresponding pluralities of frequency bands and for each of the plurality of frequency bands determining the set of spatial parameters indicative of spatial properties of the at least two input audio channels within the corresponding frequency band (§ 0073-0074).

Claim 4 is dependent upon claim 1. Regarding claim 4, Baumgarte discloses wherein the set of spatial parameters includes at least one localization cue (page 6, ¶ 0074 teaches of spatial parameters that include an ILD and an ITD).

Claim 5 is dependent upon claim 4. Regarding claim 5, Baumgarte discloses wherein the set of spatial parameters includes at least tow localization cues comprising an interchannel level difference and a selected one of an interchannel time difference and an interchannel phase difference (See Baumgarte page 6, ¶ 0074 as applied to claim 4 above).

Claim 6 is dependent upon claim 4. Regarding claim 6, Baumgarte discloses wherein the measure of similarity comprises information that cannot be accounted for by the localization cues (page 6, ¶ 0074 teaches that the maximum value of the cross-correlation is used, the maximum value reads on information that cannot be accounted for the localization cues).

Claim 7 is dependent upon claim 1. Regarding claim 7, Baumgarte discloses wherein the measure of similarity corresponds to a value of a cross-correlation function at a maximum of said cross-correlation function (page 6, , ¶ 0074 that the maximum of the cross-correlation is used).

Regarding claim 9, Baumgarte discloses a method of coding an audio signal, the method comprising:

means for generating a monaural signal comprising a combination of at least two input audio channels (mono audio signal generated by PCSC encoder 1201, Figure 12; page 7, ¶ 0081) ,

means for determining a set of spatial parameters indicative of spatial properties of the at least two input audio channels, the set of spatial parameters including a parameter representing a measure of similarity of waveforms of the at least two input audio channels (PCSC encoder 1201 generates spatial cues based on audio signals input to PCSC encoder and is implemented based on transmitter 1000 of Figure 10, Figure 12, ¶¶ 0081-0082 and ¶ 0074; in transmitter 1000 each pair of frequency bands for left and right audio signals are compared to generate one more spatial cues (e.g. an ILD value, an ITD value and/or an HRTF (¶ 074); for each frequency band, a cross-correlation between the converted left and right audio signals is estimated),

and means for generating an encoded signal comprising the monaural signal and the set of spatial parameters (modulation module 1204 embeds the sets of auditory scene parameters generated by the PCSC encoder into the mono signal to generate a PCSC signal that is transmitted to the PCSC receiver, Figure 12; page 7, ¶ 0082).

Regarding claim 10, Baumgarte as applied above to claim 9 discloses an apparatus for supplying an audio signal, the apparatus comprising::

an input for receiving an audio signal (inputs to PCSC encoder 1204),

an encoder as claimed in claim 9 for encoding the audio signal to obtain an encoded signal (See Baumgarte as applied to claim 9 above),

and an output for supplying the encoded audio signal (output of modulation module 1204 is the encoded signal, Figure 12; page 7, ¶ 0082).

Regarding claim 11, Baumgarte discloses an encoded audio signal, the signal comprising:

a monaural signal comprising a combination of at least two audio channels (mono audio signal generated by PCSC encoder 1201, Figure 12; page 7, ¶ 0081),

a set of spatial parameters indicative of spatial properties of the at least two input audio channels, the set of spatial parameters including a parameter representing a measure of similarity of waveforms of the at least two input audio channels (PCSC encoder 1201 generates spatial cues based on audio signals input to PCSC encoder and is implemented based on transmitter 1000 of Figure 10, Figure 12, ¶ 0081-0082 and ¶ 0074; in transmitter 1000 each pair of frequency bands for left and right audio signals are compared to generate one more spatial cues (e.g. an ILD value, an ITD value and/or an HRTF (¶ 0074); for each frequency band, a cross-correlation between the converted left and right audio signals is estimated),.

Regarding claim 13, Baumgarte discloses a method of decoding an encoded audio signal, the method comprising:

obtaining a monaural signal from the encoded audio signal, the monaural signal comprising a combination of at least two channels (1206 module of the receiver obtains the mono audio signal from the encoded audio signal, Figure 12; ¶ 0084; Figure 12; page 7, ¶ 0081),

obtaining a set of spatial parameters from the encoded audio signal, the set of spatial parameters including a parameter representing a measure of similarity of

waveforms of the at least two audio channels (PCSC decoder 1209, Figure 12, ¶ 0084, ¶ 0074) ,

and generating a multi-channel output signal from the monaural signal and the spatial parameters (PCSC decoder 1209 generates a multi-channel output ; Figure 12, ¶ 0084).

Regarding claim 14, Baumgarte discloses a decoder for decoding an audio signal, the decoder comprising:

means for obtaining a monaural signal from the encoded audio signal, the monaural signal comprising a combination of at least two channels (1206 module of the receiver obtains the monaural signal from the encoded audio signal , Figure 12; ¶ 0084),

means for obtaining a set of spatial parameters from the encoded audio signal , the set of spatial parameters including a parameter representing a measure of similarity of waveforms of the at least two audio channels(PCSC decoder 1209, Figure 12, ¶ 0084, ¶ 0074) ,

and means for generating a multi-channel output signal from the monaural signal and the spatial parameters (PCSC decoder 1209 generates a multi-channel output ; Figure 12, ¶ 0084) .

Regarding claim 15, Baumgarte as applied above to claim 14 discloses an apparatus for supplying a decoded audio signal, the apparatus comprising:

an input for receiving an encoded audio signal (encoded audio signal is received as input to 1206, Figure 12; ¶ 0084),

an decoder as claimed in claim 14 for decoding the encoded audio signal to obtain a multi-channel output signal (See Baumgarte as applied to claim 14 above), and an output for supplying or reproducing the multi-channel output signal encoded audio signal (PCSC decoder 1209 generates a multi-channel output; Figure 12, ¶ 0084).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baumgarte et al. (US 2003/0035553) in view of Davis et al. (WO 99/04498).

Regarding claim 12, Baumgarte fails to disclose a storage medium having stored thereon an encoded audio signal. Davis discloses a storage medium having stored thereon an encoded signal as claimed in claim 11 (Davis discloses that an encoded audio signal is passed along path 51 for transmission or storage; page 7, lines 30-32, Figure 1). It would have been obvious to modify Baumgarte by providing a storage medium so that the encoded audio signal can be stored so that the data can be saved.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devona E. Faulk whose telephone number is 571-272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



/Devona E. Faulk/
Examiner
Art Unit 2615
2/12/2008